

ER 11-2-220

DEPARTMENT OF THE ARMY
Office of the Chief of Engineers
Washington, D. C. 20314

DAEN-CWB

Regulation
No. 11-2-220

29 July 1977

Army Programs
CIVIL WORKS ACTIVITIES
GENERAL INVESTIGATIONS
(RCS DAEN-CWB-12)

1. Purpose. This regulation furnishes guidance and establishes procedures pertaining to programming and budgeting of Civil Works functions under the General Investigations appropriations title and for the General Investigations function under the Flood Control, Mississippi River and Tributaries title.

2. Applicability. This regulation applies to all OCE elements and all field operating agencies having Civil Works responsibilities.

3. Reference.

- a. ER 11-2-201
- b. ER 11-2-240
- c. ER 18-2-1
- d. ER 18-2-2
- e. ER 37-2-10
- f. ER 70-1-5
- g. ER 1105-2-10
- h. ER 1105-2-14
- i. ER 1105-2-81
- j. ER 1105-2-82
- k. ER 1105-2-210
- l. EM 1110-2-8201

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

This regulation supersedes Chpt. 2 and that portion of Chpt. 6, ER 11-2-101 pertaining to General Investigations function under the Flood Control, MR&T Title, 1 August 1964 and cancels RCS DAEN-CWP-6 (R2) and RCS DAEN-CWB-9.

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4. Reports Control Symbols. RCS numbers assigned for the reporting of the data required by this ER are:

a. Budgetary Justification Data. RCS DAEN-CWB-12 is assigned to the submission of Civil Works budgetary data needed to support and justify budget requests. These data cover the requirements for the initial submission of field recommendations, the formulation of the Corps of Engineers budget recommendations to the Secretary of the Army and the Office of Management and Budget (OMB), and the defense of the President's Budget before Congress.

b. Current Fiscal Year Reporting. Separate RCS numbers have been assigned to the reports pertaining to the submission of data concerning the execution of the current year program. The RCS numbers assigned for these reports are:

<u>Report</u>	<u>RCS Number</u>
Schedules of Obligations and Expenditures	DAEN-CWB-8
Report of Civil Works Expenditures by State	DAEN-CWB-3

5. Appropriation. The General Investigations appropriation title provides funds for:

a. Investigations authorized by general or specific Congressional legislation or by resolution of the Committee on Environment and Public Works of the U.S. Senate or the Committee on Public Works and Transportation of the House of Representatives, including interim reports thereon. The purpose is to determine the advisability of adopting new or modifying existing Federal projects for navigation, flood damage prevention, shoreline protection, and solutions for related water resources needs including those for which there is no Corps of Engineer implementation role. Planning assistance to and coordination with other Federal agencies, States, and other non-Federal public interests are also funded under this appropriation.

b. Activities in the collection and study of basic data not chargeable directly to authorized surveys or projects, performed by other Federal agencies with funds budgeted for and transferred by the Corps of Engineers under the cooperative programs of observing and compiling basic data on streamflow, rainfall, and the Corps participation in the various boards to study and control international streams and watersheds which mutually affect the United States and bordering nations.

c. Research and development activities which assist in the solution of continuing and recurring water resource development problems affecting the planning, construction and operation of projects, but not directly chargeable to authorized surveys or projects, nor covered by cooperative programs for which funds are transferred to other agencies.

6. Appropriation Structure. The Corps of Engineers Civil Works budget request for appropriation of funds for General Investigations is submitted to the Secretary of the Army, OMB, and to the Congress in accordance with the categories and classes shown in Appendix A.

7. Study Classifications, Accounts and Definitions. Appendix A contains the data indicating the General Investigations study classifications, accounts, uniform cost account numbers and definitions required for study management and accounting.

8. Cost Estimates. Realistic and accurate cost estimating is essential to dependable programming, budgeting and study management to achieve scheduled milestone dates and assure timely completion of funded studies.

a. Study Cost Estimate (PB-6), ENG Form 2204 (RCS DAEN-CWB-12). The Study Cost Estimate is the detailed breakdown of the total estimated Federal cost of the study by study accounts and subaccounts and, if applicable, the justification of specific changes from the previous approved estimate. It provides basic cost data required for preparation of budget requests and justification to OMB and the Congress. The Study Cost Estimate (PB-6) is used for Navigation Studies, Flood Damage Prevention Studies, Shoreline Protection Studies, Special Studies, Authorization studies derived from Level B Studies, and Review of Completed Projects (Section 216, P.L. 91-611). Appendix B provides the details for preparation and submission of the PB-6.

9. Budgetary Submissions. The Corps of Engineers annually furnishes the Secretary of the Army, OMB, and the Congress with sufficient information upon which to base a decision for inclusion of a study in the President's Budget and the appropriation of funds for continuing studies and programs and new start recommendations under the General Investigations appropriations title. Guidance for preparations and submissions of required data by Division and District Engineers and other responsible officers are provided below and in the referenced appendixes.

10. Formulation of Budget Recommendations. The formulation of budget recommendations is initiated each spring in OCE by the issuance of an Engineer Circular which outlines specific guidance and criteria to be

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observed in the preparation and submission of funding recommendations for continuing activities and new start recommendations under the General Investigations appropriations title. With this background, the District Engineer or responsible officer prepares his request for funds, detailing the proposed programming of studies with accompanying supporting justification and submits his request for review to the Division Engineer or OCE as appropriate. After review of the District Engineer's programs, the Division Engineer submits his program to OCE.

a. After review of the overall General Investigations program in OCE and the Office of the Assistant Secretary of the Army for Civil Works, it is incorporated in the yearly Civil Works Budget Memorandum and submitted to the Secretary of the Army for transmittal to OMB.

b. After OMB has reviewed and acted on the General Investigations program, it furnishes a "passback" of specific allowances and the overall program. OCE then advises the Division Engineers of their allocations within these specific allowances to studies and program activities and may permit field adjustments for individual studies. After final adjustments have been made, the Districts prepare a Statement of Justification for each study and submit them to the Division for review, consolidation and preparation of the final Justification of Estimate at the Division level for submission to the Congress in January.

c. After appropriations of funds by Congress and apportionment by OMB, OCE issues General Investigations work allowances by applicable classes to the Districts and operating elements in accordance with the instructions of Congress and OMB. The Districts and operating elements then adjust their General Investigation program to conform with these work allowances and prepare a revised Schedule of Obligations and Expenditures.

11. Preauthorization Feasibility Studies (Surveys) - Continuing.

a. Initial Submission - (RCS DAEN-CWB-12). Based on guidance contained in the annual Engineer Circular, District Engineers, utilizing the Study Program Schedule, ENG Form 2205a (PB-5a) and Statements of Justification, prepare their recommendations for funding. On completion, these documents are forwarded to the Division Engineer in sufficient time to allow thorough review and approval by the Division Engineer prior to submission to OCE. Submission dates and any data required to be submitted for any alternative program or level of funding will be specified annually by DAEN-CWB. Instructions for preparation of the PB-5a and Statement of Justification are contained in Appendices C and D respectively.

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(1) Study Program Schedule (PB-5a) ENG Form 2205a-(RCS DAEN-CWB-12). The PB-5a presents the total study cost estimate, past allowances, allowance for current fiscal year, and the proposed funding schedule annually for the budget year plus the four following fiscal years and the balance to complete thereafter. It is the basic document for initial study programming and annual budgetary recommendations.

(2) Statement of Justification - (RCS DAEN-CWB-12). A Statement of Justification for each study recommended for inclusion in the President's Budget will be prepared as concisely as possible and will contain the necessary information for a complete and logical presentation by OCE to the Secretary of the Army and to OMB.

b. Final Submission - (RCS DAEN-CWB-12). After OMB has furnished final budget allowances for the budget fiscal year, DAEN-CWB will notify the Division Engineer of these amounts. The Division Engineer will then prepare the Justification of Estimate based on data supplied by the District Engineers and submit this document to OCE for inclusion in the justification data presented to Congress in defense of the President's Budget. Instructions for preparation of the Justification of Estimate are contained in Appendix D.

c. Statement of Justification - (RCS DAEN-CWB-12). The District Engineer revises the Statement of Justification prepared for the initial submission to conform with the final budget allowances for the budget year and submits these documents to the Division Engineer for review and approval. After approval by the Division Engineer the Statements of Justification are submitted to DAEN-CWB as supporting justification data for those studies contained in the President's Budget.

12. Preauthorization Feasibility Studies (Surveys) - New Starts.

a. Initial Submission. Division Engineers may recommend for initiation of investigation, in the budget fiscal year, those studies which are of high priority and are contained in the five-year investment program.

(1) Five-Year Investment Program. Each year Division Engineers will prepare a Five-Year Survey Investment Program for each region or portion of region within the division, based on a regional investment allocation provided annually by DAEN-CWB. The Five-Year Investment Program should contain all active authorized studies available for initiation in the five-year period. The priority ranking of these surveys should be based in part on an analysis of the water resource

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needs and Corps of Engineers objectives within each water resource region, as contained in the Five-Year Construction Investment Program, Needs Data Base. (Also referred to as the Planning, Programming and Budgeting System - PPBS). A thorough analysis of the backlog of studies for recommendations regarding reclassification should be conducted in accordance with ER 1105-2-10 prior to formulation of the investment program. Detailed instructions for the data required in this submission are provided in Appendix E.

(2) Budget Fiscal Year Data. Extreme care should be exercised to assure that studies recommended for initiation are of high priority and have the support of local interests. District Engineers prepare the PB-5a, Statement of Justification, and study area maps for each study being recommended, in accordance with instructions contained in Appendix D. These will then be submitted to the Division Engineer for review. Based upon the District Engineers submittal, Division Engineers prepare the summary table illustrated in Appendix E and forward all data to OCE.

b. Final Submission. Upon notification by OCE of the studies which have been included in the President's Budget as new starts, the District Engineer will update and revise as necessary the Statement of Justification for each study in the budget. These will be submitted to the Division Engineer for review and use as Data for Testifying Officers at the Congressional budget hearings. The Division Engineer will also use them in preparing the Congressional Justification of Estimate. The new start Statement of Justifications and Justification of Estimates will be transmitted to OCE with the continuing program in accordance with instructions contained in Appendix D.

13. Framework and River Basin Studies. Coordinated Federal inter-agency budgets for Framework Studies and Assessments (Level A) and Water Resources Council Comprehensive Basin Studies (Level B) including supporting justification are prepared and submitted in accordance with instructions from the Water Resources Council and OCE. (ER 1105-2-14).

14. Review of Authorized Projects. Submissions for the subclasses "Review of Completed Projects" and "Restudy of Deferred Projects" shall be prepared in accordance with instructions provided by Appendix D for preauthorization feasibility studies. Submissions for "Project Deauthorization Reviews" shall be prepared in accordance with ER 1105-2-82 and instructions given in Appendix F. Submissions on "Detailed Economic Studies" shall be prepared in accordance with specific instructions from DAEN-CWB, as required.

15. Coordination with Other Federal Agencies, States, and non-Federal Public Interests; International Water Studies; and Hydrologic Studies - (RCS DAEN-CWB-12). The preparation and submission of budget recommendations and supporting justification data for these classes are the same as for Preauthorization Feasibility Studies (Surveys) - Continuing, except that the Statement of Justification will be prepared in the format of Illustration D-3, Appendix D. There is no requirement for inclusion of these classes in the Justification of Estimate.
16. Stream Gaging (U. S. Geological Survey). Budgetary requirements and preparation of justification data for this class are consolidated and prepared in OCE based on data submitted by the Division Engineer in accordance with the provisions of EM 1110-2-8201. Coordination with U.S. Geological Survey is accomplished at the OCE level.
17. Precipitation Studies (National Weather Service). Budgetary requirements and justification data required for this class are prepared in OCE after coordination with the National Weather Service.
18. Flood Plain Management Services. Budgetary requirements and justification data required for this class are prepared in OCE based on data submitted by the Division Engineer in accordance with instructions issued by DAEN-CWP-F and DAEN-CWB in an annual Engineer Circular.
19. Scientific and Technical Information Centers. Budgetary requirements and justification data required for this class are prepared in OCE based on data submitted by the Director, Waterways Experiment Station and the Director, Coastal Engineering Research Center. The data submitted by WES and CERC is the same as that required for Preauthorization Feasibility Studies (Surveys) - Continuing, except that the Statement of Justification will be prepared in the format of Illustration D-3, Appendix D and there is no requirement for preparation of a Justification of Estimate.
20. Coastal Data Collection. Budgetary requirements and justification data required for this class are prepared in OCE based on data submitted in accordance with requests from DAEN-CWE.
21. Research and Development. Budgetary requirements and justification data required for this class are prepared in OCE by the Research and Development Office in accordance with the provisions of ER 70-1-5.
22. Capabilities (RCS DAEN-CWB-12) and Disclosure of Budgetary Information.
 - a. The President's Budget is the appropriate amount consistent with the Administration's assessment of national properties and objectives.

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All elements of the Corps are expected to support the President's Budget decisions. However, for individual studies, the Congress has at times increased budget amounts on the basis of the amount in addition to the budget which could be efficiently utilized in the budget fiscal year. To this end, it is the practice of the Corps to provide local interests and the Congress, upon request, with capability amounts for individual studies. For each active authorized study which has not yet been funded for completion, the Division Engineer will establish a budget fiscal year capability in accordance with the directives and guidance contained in Appendix L or ER 11-2-240. The capability of each study is the amount which can be efficiently utilized during the budget fiscal year without regard to fiscal constraints but with full recognition of personnel restraints and sound engineering practice. Establishment of capabilities should be based on the assumption that capability amounts will be available on or about 1 October of the budget fiscal year. Tabulations of capabilities will be submitted, in accordance with Appendix L of ER 11-2-240 to HQDA (DAEN-CWB-S) WASH DC 20314 not later than the first Monday in January.

b. All budgetary data, such as the recommendations of District and Division Engineers, the Chief of Engineers, and the Secretary of the Army are not to be disclosed outside of the Department of the Army. Specific instructions on disclosure and mailing of budgetary documents are contained in Appendix L of ER 11-2-240.

23. Funding, Apportionment, Work Allowances and Transfers. The appropriation by Congress, apportionment by OMB, issuance of work allowances by OCE and any subsequent necessary adjustments for General Investigations funds are discussed in ER 11-2-201.

24. Current Year Program Management. It is imperative that: schedules of study activities be logical and orderly; schedules of obligations and expenditures be established and maintained; and accurate cost accounting and performance reporting methods be followed.

a. Schedules of Obligations and Expenditures ENG Form 2101 (RCS DAEN-CWB-8). Schedules of Federal obligations and expenditures for all classifications in the General Investigation appropriation title are prepared separately on ENG Form 2101. Information as to format and submission is contained in ER 11-2-240.

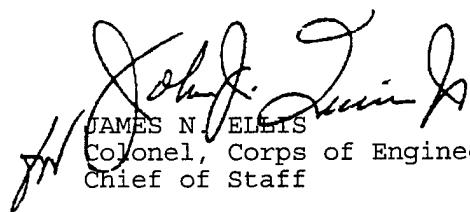
b. Intensive Management Program Monitor System (RCS DAEN-CWR-3). Policies, procedures, and reporting requirements for intensive management of the survey program are contained in ER 18-2-2 and ER 1105-2-10.

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25. Report of Civil Works Expenditures by State - (RCS DAEN-CWB-3).
General Investigations funds are to be included in the report as outlined in ER 11-2-240.

26. Classifications for Active, Inactive and Deferred Studies.
Definitions and procedures for these recommendations are contained in ER 1105-2-10.

FOR THE CHIEF OF ENGINEERS:



JAMES N. ELLIS
Colonel, Corps of Engineers
Chief of Staff

6 Appendixes

APP A - General Investigations
Accounting System

APP B - Study Cost Estimate (PB-6)

APP C - Study Program Schedule
(PB-5a)

APP D - Justification Data

APP E - New Survey Start Budget
Data

APP F - Deauthorization Review

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APPENDIX A

GENERAL INVESTIGATIONS [96X3121]

Category, Class and Subclass Name	Category	Class	Sub- class	Account	Sub- account
SURVEYS	1	0	0		
Navigation Studies	1	1	0	<u>1/</u>	<u>2/</u>
Flood Damage Prevention					
Studies	1	2	0	<u>1/</u>	<u>2/</u>
Shoreline Protection Studies	1	3	0	<u>1/</u>	<u>2/</u>
Special Studies	1	4	0	<u>1/</u>	<u>2/</u>
Comprehensive Studies	1	5	0		
Framework Studies and Assessments (Level A)	1	5	1	<u>1/</u>	<u>2/</u>
Comprehensive Basin Studies (Level B)	1	5	2	<u>1/</u>	<u>2/</u>
Authorization Reports From Level B Studies	1	5	3	<u>1/</u>	<u>2/</u>
Review of Authorized Projects	1	6	0		
Restudy of Deferred Projects	1	6	1	<u>1/</u>	<u>2/</u>
Review of Completed Projects (Sec. 216, P.L. 91-611)	1	6	2	<u>1/</u>	<u>2/</u>
Review For Deauthorization (Sec. 12, P.L. 93-251)	1	6	3	09	
Detailed Economic Studies	1	6	4	09	
Inventory of Dams (P.L. 92-367)	1	7	0	06	
Coordination With Other Federal Agencies, States, and Non-Federal Interests	1	8	0		
Department of Agriculture, SCS	1	8	1	06	
Department of Interior, Bureau of Reclamation	1	8	2	06	
River Basin Commissions and Committees	1	8	3	06	
Water Quality Management (Sec. 208, P.L. 92-500)	1	8	4	06	
Coastal Zone Management (P.L. 92-583)	1	8	5	06	
Planning Assistance to States (Sec. 22, P.L. 93-251; Sec. 204, P.L. 91-611; and Sec. 214, P.L. 89-298)	1	8	6	06	

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Category, Class and Subclass Name	Category	Class	Sub-class	Account	Sub-account
National Wild and Scenic Rivers System (P.L. 90-542)	1	8	7	06	
Technical and Engineering Assistance on Shore and and Streambank Erosion (Sec. 55, P.L. 93-251)	1	8	8	06	
COLLECTION AND STUDY OF BASIC					
DATA	2	0	0		
Stream Gaging	2	1	0	07	
Precipitation Studies	2	2	0	07	
Inspection of Dams (P.L. 92- 367)	2	3	0	07	
International Water Studies	2	4	0	07	
Flood Plain Management Services	2	5	0	07	
Hydrologic Studies	2	6	0		
Storm Studies	2	6	1	07	
General Hydrologic Studies	2	6	2	07	
Sedimentation Studies	2	6	3	07	
Streamflow and Rainfall Data	2	6	4	07	
Scientific and Technical					
Information Centers	2	7	0	07	
Coastal Data Collection	2	8	0	07	
Transportation Systems	2	9	0	07	
RESEARCH AND DEVELOPMENT	3	0	0		
Materials	3	1	0		
Soils	3	1	1	08	
Rock	3	1	2	08	
Concrete	3	1	3	08	
Structural Engineering	3	1	4	08	
Electrical - Mechanical	3	1	5	08	
Coastal Engineering	3	2	0		
Coastal Hydraulics	3	2	1	08	
Coastal Sediments	3	2	2	08	
Coastal Structures	3	2	3	08	
Sediment - Hydraulic Interaction	3	2	4	08	
Structure - Hydraulic Interaction	3	2	5	08	
Structure - Sediment Interaction	3	2	6	08	
Structure - Sediment - Hydraulic Interaction	3	2	7	08	

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Category, Class and Subclass Name	Category	Class	Sub- class	Account	Sub- account
Flood Control and Navigation	3	3	0		
Waterways	3	3	2	08	
Locks and Dams	3	3	3	08	
Improvement of O & M Techniques	3	3	4	08	
Hydrology of Cold Regions	3	3	5	08	
Ice Engineering	3	3	6	08	
Environmental Quality	3	4	0		
Environmental Impact	3	4	1	08	
Wastewater Management	3	4	3	08	
Water Resources Planning					
Studies	3	5	0		
Planning Methodologies	3	5	2	08	
Analytical Techniques For Water Resources Management	3	5	3	08	
Recreation	3	5	4	08	
Flood Plain Management	3	5	5	08	
Earth Resources Satellite	3	6	0	08	

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES (96X3112)

GENERAL INVESTIGATIONS	1	0	0		
Surveys	1	1	0		
Navigation Studies	1	1	1	<u>1/</u>	<u>2/</u>
Flood Damage Prevention Studies	1	1	2	<u>1/</u>	<u>2/</u>
Collection and Study of Basic Data	1	2	0	07	

1/ Must use Account Numbers 01., 02., and 03. for these codes

2/ Subaccount Numbers are required for these codes and may be used for other codes if applicable.

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Following are Account Numbers to be used:

<u>Account No.</u>	<u>Name</u>
01.	Stage 1 Planning
02.	Stage 2 Planning
03.	Stage 3 Planning
06.	Inventory of Dams and Coordination Studies w/other Agencies
07.	Collection and Study of Basic Data
08.	Research and Development
09.	Other

<u>Subaccount No.</u>	<u>Sub-Feature</u>
01.	Public Involvement
02.	Institutional Studies
03.	Social Studies
04.	Cultural Resources Studies
05.	Environmental Studies Except Fish and Wildlife
06.	Fish and Wildlife Studies
07.	Economic Studies
08.	Surveying and Mapping
09.	Hydrology and Hydraulic Investigations
10.	Foundations and Materials Investigations
11.	Design and Cost Estimates
12.	Real Estate Studies
13.	Study Management
14.	Plan Formulation and Evaluation
15.	Report Preparation
20.	Other Studies (identify)
31.	Supervision and Administration

1. Definitions. Following are brief descriptions of all categories, classes and subclasses of General Investigations (96X3121).

a. Comprehensive Basin Studies (150). This category consists of:

(1) Framework Studies and Assessments (Level A) (151). Studies are generally funded through the Water Resources Council.

(2) Water Resources Council Comprehensive Basin Studies (Level B) (152). Studies are generally funded through the Water Resources Council.

(3) Authorizations from Level B Studies (153). This is described under Level C Studies.

b. Level C Studies. These consist of:

(1) Preauthorization Feasibility Studies (Surveys) (100). Includes investigations specifically authorized by Acts of Congress or by resolutions adopted by the Committee on Environment and Public Works of the U. S. Senate or the Committee on Public Works and Transportation of the House of Representatives. All studies in this category require reports to Congress with appropriate recommendations, as directed in the authorizing language.

(a) Navigation Studies (110). Includes all studies in which investigation of navigation problems and needs is the predominant purpose.

(b) Flood Damage Prevention Studies (120). Studies involving river or stream induced flooding problems, or other multiple uses of water resources.

(c) Shoreline Protection Studies (130). Studies involving erosion of beaches and other coastal problems.

(d) Authorizations from Level B Studies (153). Studies to implement Water Resources Council Comprehensive Level B (152) study findings reported to Congress.

c. Special Studies (140). Includes those implementation studies of an unusual nature which cannot be appropriately classified under one of the other four subclasses of preauthorization feasibility studies.

d. Review of Authorized Projects (160). This class includes studies of authorized projects which are not specifically authorized by Act of Congress or resolutions of Committees on Public Works, and which are not a part of Advance Engineering and Design under Construction, General. There are four subclasses of studies under this class:

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(1) Review of Completed Projects (162). Studies conducted under authority of Section 216, Public Law 91-611, which may result in a report to Congress with modification recommendations. These studies are of level C scope.

(2) Project Deauthorization Review (163). Reviews conducted under the authority of Section 12, Public Law 93-251, which result in recommendations to the Chief of Engineers, who annually Congress with a list of projects which are recommended for deauthorization (ER 1105-2-82).

(3) Restudy of Deferred Projects (161). Studies proposed by the Chief of Engineers through the budgetary process to review specific projects which have been previously classified "deferred" to determine whether the projects should be reclassified to the "active" category. Such studies are normally proposed when the conditions which caused the project to be classified "deferred" may no longer exist or may be questionable.

(4) Detailed Economic Studies (164). Studies conducted on projects at the request of the Appropriations Committee of the Senate or the House of Representatives. Such studies are generally to affirm or reevaluate the economic justification of a project prior to continuing Federal investment.

e. Inventory of Dams (170). Work accomplished under the authority of Public Law 92-367, the National Dam Safety Act.

f. Coordination with Other Federal Agencies, States, and Non-Federal Public Interests (180). Funds budgeted under this class are for Corps participation in studies which are primarily the responsibility of other Federal agencies, States or other non-Federal public interests.

(1) Department of Agriculture, Soil Conservation Service (181). Work accomplished under the Watershed Protection and Flood Prevention Act of 1954 (PL 83-566, as amended); Section 7, Public Law 534, Flood Control Act of 1944; Public Law 91-190, National Environmental Policy Act of 1969; and Executive Order No. 10, 913, dated 18 January 1961.

(2) Department of the Interior, Bureau of Reclamation (182). Work accomplished under the authority of Section 7, Public Law 534, Flood Control Act of 1944; and Public Law 685, Small Reclamation Projects Act of 1956.

(3) River Basin Commissions and Interagency Committees (183). Work accomplished under the authority of Title III, Public Law 89-80, Water Resources Planning Act of 1965, for Corps participation in activities of River Basin Commissions and Interagency coordinating committees.

(4) Water Quality Management (184). Work accomplished under the authority of Section 208, Public Law 92-500, the Federal Water Pollution Control Act Amendments of 1972.

(5) Coastal Zone Management (185). Work accomplished under the authority of Public Law 92-583, Coastal Zone Management Act of 1972.

(6) Planning Assistance to States (186). Work accomplished under the authority of: Section 22, Public Law 93-251, Water Resources Development Act of 1974 (ER 1105-2-81); Section 214, Public Law 89-298, Flood Control Act of 1965 (New York); and Section 204, Public Law 91-611, Flood Control Act of 1970 (Puerto Rico).

(7) National Wild and Scenic Rivers System (187). Work accomplished under the authority of Section 5(a), Public Law 90-542, as amended.

(8) Technical and Engineering Assistance on Shore and Streambank Erosion (188). Works accomplished under the authority of Section 55, Public Law 93-251, Water Resources Development Act of 1974.

g. Collection and Study of Basic Data (200). This category comprises continuing activities not directly chargeable to authorized surveys or projects. It includes work performed by the Corps and other Federal agencies under the cooperative programs of observing and compiling basic data. In addition, it includes funds for Corps of Engineers participation in the various boards to study the control of international streams and watersheds which mutually affect the United States and bordering nations. The classes of studies under this category are as follows:

(1) Stream Gaging (210). Includes activities relative to a part of the cooperative stream gaging program between the U. S. Geological Survey and the Corps of Engineers for the installation and operation of stations and the collection and publication of stream flow data from general coverage stations.

(2) Precipitation Studies (220). Includes activities conducted by the National Weather Service for the Corps of Engineers in connection with the hydroclimatic network of precipitation stations under the authority of Section 207, Public Law 780, 3 September 1954.

(3) Inspection of Dams (230). Conduct a national program of inspection of dams authorized by Public Law 92-367. Technical inspections will be made on all dams whose failure or partial failure would endanger the lives of the public or cause substantial property damage.

(4) International Water Studies (240). Includes the Corps of Engineers participation in a number of engineering and control boards, essentially to assure control, utilization, and orderly development of the water resources along the Canadian-United States boundary in

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accordance with provisions of the Boundary Waters Treaty of 1909, the Niagara River Treaty of 1950, the Columbia River Treaty of 1961, and other less formal agreements between the two governments.

(5) Flood Plain Management Services (250). Includes studies conducted by the Corps of Engineers under the authority of Section 206, Public Law 86-645, Flood Control Act of 1960, as amended. This authorizes the Secretary of the Army to compile and disseminate data on floods and flood damage potentials and to provide guidance in their use in flood related planning to Federal, State, and local agencies.

(6) Hydrologic Studies (260). Includes the collection and study of basic data to provide information for future use in the design, construction, and operation of water control structures. The program consists of four subclasses:

(a) Storm Studies (261). Continuing investigation of major storms for the purpose of accumulating comprehensive data. These data are required in the evaluation of flood producing potentialities of river basins and constitute the major portion of the basic data used in determining probable maximum precipitation patterns.

(b) General Hydrologic Studies (262). Includes hydrologic analyses of rainfall-runoff relationships, snowmelt studies, flood forecasting, analyses of past floods, infiltration indices, unit hydrographs, development of flood hydrographs, and other studies of related hydrologic nature that are not clearly chargeable to specific studies or projects.

(c) Sedimentation Studies (263). Continuing effort of nonproject sedimentation studies for the Corps' share of an interagency sediment investigation program.

(d) Streamflow and Rainfall Data (264). Continuing program for installation and operation of streamflow and rainfall gages of a nonproject nature that are required by the Corps in addition to the stations in the cooperative programs conducted by the U. S. Geological Survey and the National Weather Service for the Corps. Additionally, the gages are needed to more accurately predict hurricane surges.

(7) Scientific and Technical Information Centers (270). Operation of information analysis centers for specific technical areas closely related to Civil functions, in support of DOD engineers and scientists, under the Authority of AR 70-45 and AR 70-22.

(8) Coastal Data Collection (280). Field collection of coastal engineering data required to optimally develop functional and structural coastal project designs, to economically evaluate alternative solutions to coastal problems and for general planning application.

(9) Transportation Systems (290). Work consists of the maintenance, updating, and enhancement of the Inland Navigation Systems Analysis (INSA) program data files and models (analytical and simulation) to assist in the planning of navigation projects and the operation of waterways. This requires consideration of system-wide benefits and costs, not only for the inland navigation mode but for the rail and pipeline modes as well.

h. Research and Development (300). This category comprises activities of the Corps of Engineers to assist in the solution of continuing and recurring water resource development problems affecting the planning, construction, and operation of projects, but not directly chargeable to authorized surveys or projects, not covered by cooperative programs for which funds are transferred to other agencies. This category consists of six classes as follows:

(1) Materials (310). The research effort designed to study characteristics and interactions of construction materials and combinations thereof and to optimize their use in construction including the following:

(a) Soils (311). The study of soils, soil mechanics, earthwork engineering and the characteristics and engineering properties of soils and soil-chemical mixtures.

(b) Rock (312). Studies of engineering properties of rock masses, rock behavior as foundations, rock under changed stress conditions, and sources of construction materials; and studies of significant geologic phenomena, such as earthquake generation and propagation.

(c) Concrete (313). The study of cements, aggregates, additives, reinforcement and their combinations to improve concrete properties and performance.

(d) Structural Engineering (314). The study of structural components and the effects of external influences on material combinations.

(e) Electrical-Mechanical (315). The study of electrical and mechanical systems, items and equipment effects the design and life of

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certain features of hydraulic structures and conversely the study of those features of hydraulic structures which affect the design, life and performance of electrical and mechanical equipment.

(2) Coastal Engineering (320). The Research and Development effort to improve understanding of coastal processes and to develop engineering methodologies which will permit the Corps to optimally plan, design, construct and maintain effective coastal projects. The program consists of seven subclasses:

(a) Coastal Hydraulics (321). The study of hydraulic phenomena occurring in the coastal zone, including their mathematical and laboratory simulation. It includes the study of coastal currents and also the generation, propagation and transformation of both wind waves and long period waves such as tsunami and storm surges.

(b) Coastal Sediments (322). The study of the materials that make up the shorelands and offshore areas of the coastal zone; their distribution and physical characteristics such as size, composition and engineering properties.

(c) Coastal Structures (323). The study of engineering works built by man in the coastal zone.

(d) Sediment-Hydraulic Interaction (324). The study of the effects of coastal currents, waves and wind on the transport, deposition and redistribution of sediments in the coastal zone.

(e) Structure-Hydraulic Interaction (325). The study of the forces exerted on coastal structures by waves and currents and also the effects of structures on modifying those waves and currents.

(f) Structure-Sediment (326). The study of the interactions between coastal structures and the materials on which they are founded.

(g) Structure-Sediment-Hydraulic Interaction (327). The study of man's structures in the coastal zone, their influence on the waves and currents, and the resulting transport and redistribution of sediments in their vicinity.

(3) Flood Control and Navigation (330). The research effort which supports the traditional Corps mission in water resources management. Emphasis is on improving the understanding of navigation and flood

control problems on a macro-scale and using physical models and the computer to assist in complex solutions including the following:

(a) Waterways (332). The study of inland waterway systems and the problems associated with channel dimensions, erosion, and water velocity.

(b) Locks and Dams (333). Hydraulic and structural studies to improve the design and reduce the cost of flood control and navigation structures.

(c) Improvement of O&M Techniques (334). Studies directed toward improving the economy, safety, techniques and efficiency of operations and maintenance of Corps projects.

(d) Hydrology of Cold Regions (335). The study of the interaction between meteorological events and watershed characteristics and the utilization of runoff results in the development of water resources projects.

(e) Ice Engineering (336). The study of the interaction between ice forces, man-made structures, and natural phenomena.

(4) Environmental Quality (340). The research effort designed to minimize the adverse impact of Corps of Engineers activities on the environment.

(a) Environmental Impact (341). The studies designed to predict and assess the effects of construction activity on the environment and to mitigate the adverse effects and enhance environmental values.

(b) Wastewater Management (343). The study of treatment of wastewater through water disposal and land treatment.

(5) Water Resources Planning Studies (350). The research effort directed toward improving Corps planning and evaluation functions. Research will examine broad economic, social and environmental implications of Corps projects and consider all aspects of planning alternatives. The program consists of the following subclasses:

(a) Planning Methodologies (352). Studies and investigations to identify, evaluate and develop concepts and methods for analyzing and planning the development and management of the Nation's water and related land resources.

(b) Analytical Techniques for Water Resources Management (353). Studies and investigations to develop, test and evaluate specific analytical techniques for use in planning and management of water

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resources, including studies required to systematize techniques for Corps-wide utilization.

(c) Recreation (354). Studies pertaining to the improvement of methodology in the planning, design, construction, maintenance and operation of Corps-controlled recreation areas.

(d) Flood Plain Management (355). Studies addressing the development of mathematical simulation models which reflect the implications of land use change for flood plain management.

(6) Earth Resources Satellite (360). Studies concerned with the practical application for imagery and data received from satellites and aircraft flights.

2. Flood Control, Mississippi River and Tributaries (96X3112). Following are brief descriptions of classes and subclasses for the Category General Investigations in this appropriation:

a. Surveys (110). Same as paragraph 1b (1) above.

(1) Navigation Studies (111). Same as paragraph 1b (1)(a) above.

(2) Flood Damage Prevention Studies (112). Same as paragraph 1b (1)(b) above.

b. Collection and Study of Basic Data (120). Same as paragraph 1c above.

3. Account Definitions. For the purposes of cost accounting, accounts have been established. These accounts are to be utilized primarily in developing and accounting of implementation studies (Level C) costs. The concept of three-stage planning is derived from Civil Works planning regulations. A complete description of each of the planning stages (defined as "accounts" in this regulation) may be found in appropriate planning regulations.

a. Stage 1 Planning (01.). Emphasis on the preliminary collection of basic data and the development of a Plan of Study. Generally includes all costs associated with work accomplished from the initiation of a study through approval of the Plan of Study.

b. Stage 2 Planning (02.). Emphasis on the continued collection of basic data and formulation of alternatives, preliminary designs and cost estimates, impact assessments, and evaluation studies. Level of detail

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commensurate with intermediate stage planning. Includes costs generally associated with work commencing after approval of the Plan of Study and ending with the Stage II public meeting.

c. Stage 3 Planning (03.). Emphasis on development of several alternatives as detailed plans, with refinement in the impact assessments and evaluation studies required for selection of a plan for implementation. Generally includes costs associated with work commencing after the Stage II public meeting through release of the Division Engineer's public notice.

d. Account number (06.) is to be used when work is accomplished in Inventory of Dams or on Coordination Studies with other Agencies.

e. Account number (07.) is to be used when work is accomplished on Collection and Study of Basic Data.

f. Account number (08.) is to be used when work is accomplished on Research and Development.

g. Account number (09.) is to be used to identify work not included in a thru f above.

4. Subaccount Definitions. Subaccounts provide a further breakdown of Level C study costs.

a. Public Involvement (.01). This subaccount includes public involvement, especially the public involvement program required in each Level C study, intergovernmental coordination, and the previous classification of "Preliminary Planning and Public Contacts." The costs of brochures and other informational materials for public involvement activities are to be included in this subaccount.

b. Institutional Studies (.02). This subaccount includes the determination of financial and legal arrangements required to implement alternative and recommended plans. Studies would include the determination of the political and institutional arrangements of the study area and the identification of attitudes and customs regarding the management or use of the resources.

c. Social Studies (.03). This subaccount includes field and office studies required to determine and assess the social impact of all alternative plans under consideration.

d. Cultural Resource Studies (.04). This subaccount includes preliminary studies required to determine the impacts of alternative plans upon historical, architectural and archeological resources.

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e. Environmental Studies Except Fish and Wildlife (.05). This subaccount includes environmental data collection and the determination of environmental impacts of all alternative plans under consideration. Costs of environmental assessments and impacts should be included.

f. Fish and Wildlife Studies (.06). This subaccount includes coordination with and studies conducted by Federal and State Fish and Wildlife offices, as required by the Fish and Wildlife Coordination Act. Charges may also be made by the District office to this subaccount for inhouse studies and work by consultants.

g. Economic Studies (.07). This subaccount includes base studies pertinent to an economic assessment of plans under consideration, and, where applicable, studies of cost allocations among the several purposes involved.

h. Surveying and Mapping (.08). This subaccount includes all surveying, mapping, related drafting and tracing. Preparation or adaptation of maps for use in reports is included in "Report Preparation."

i. Hydrology and Hydraulics Investigations (.09). This subaccount includes collection and analysis of basic hydrologic data and the analysis of stream flow under natural and controlled conditions, especially channel hydraulics. This subaccount includes the previous classifications of "Hydrology Studies" and "Stream Regulation Studies."

j. Foundations and Materials Investigations (.10). This subaccount includes the investigation, exploration, and analysis of foundations and materials related to the selection, design, and construction of structural maintenance, and replacement.

k. Designs and Cost Estimates (.11). This subaccount includes preliminary design and cost estimating of all alternative plans, structures, relocations, and estimates of average annual operation, maintenance, and replacement.

l. Real Estate Studies (.12). This subaccount includes preliminary appraisal of costs of lands (including resettlements) and damages required for economic evaluations and construction of alternative plans. Detailed determination of lands, easements, rights-of-way, and damages for the recommended plan are also included.

m. Study Management (.13). This subaccount includes all activities related to management of a Level C study, such as study scheduling and coordination with other Corps offices, budget preparation, correspondence, and costs associated with checkpoint conferences held as part of the Intensive Management Program. (ER-1105-2-10)

n. Plan Formulation and Evaluation (.14). This subaccount includes the evaluation of alternatives and general plan formulation activities which are not appropriately costed against other subaccounts. Other subfeatures such as (.03) and (.04) should include the development of the data base and the impact assessments for the task of evaluation. The evaluation will array the costs and benefits associated with each plan as well as trade-offs required to select the recommended plan for implementation.

o. Report Preparation (.15). This subaccount includes assembling, writing, editing, typing, drafting, reviewing, revising, reproducing, and distributing study reports, such as Plans of Study, draft and final feasibility reports, Environmental Impact Statements, and other related documentation required for transmittal to higher authorities.

p. Other Studies (.20). This subaccount includes specialized studies conducted by academic institutions, research laboratories, and consultants, or by hired labor, such as models, model tests, and special studies on salinity, sediment, water supply, pollution abatement, recreation, etc. These studies, because of their magnitude, costs, or nature, should not be included as incidental elements of other subaccounts and should be specifically identified.

q. Supervision and Administration (.31). This subaccount includes supervision and administration directly chargeable to the study, and overhead and other indirect costs which cannot be allocated directly to other subaccounts of the study.

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APPENDIX B

STUDY COST ESTIMATE (PB-6), ENG Form 2204 (RCS DAEN-CWB-12)

1. Purpose. The Study Cost Estimate (PB-6), (Illustration No. B-1), is used to both support the estimated cost of a study and to assist in managing the expenditure of funds for a study.

2. Applicability. Generally, the PB-6 should be used for all studies conducted under the General Investigations appropriations title. The account structure, Stages 1, 2 and 3, should be used when the study can be appropriately broken down into these stages, as defined in ER 1105-2-210. The subaccount structure is applicable to all studies.

3. Initial Submission and Updating.

a. The district shall prepare and submit to the Division Engineer for approval an initial PB-6 as follows; together with supplemental information as prescribed in paragraph (5):

(1) For surveys, immediately upon receipt of assignment letter, the district will prepare a PB-6 to support a preliminary estimated cost. The PB-6 should have a total for each of the three accounts and a breakdown by subaccounts for Stage 1 only. The PB-6 will be labeled "Initial Estimate" in the upper left block over the title of the form.

(2) For interim survey reports, the district will prepare a PB-6 to supplement the basic PB-6 and forward it through the Division Engineer for approval when requesting OCE approval to submit an interim report.

(3) For authorization reports from Level B studies, the district will prepare a PB-6 as soon as the need for a Level C authorization study is identified and recommended in the Level B study.

(4) For Section 216 studies, the District Engineer will prepare a PB-6 when a new start is recommended as part of the annual budget process.

(5) For all of the above types of studies, the PB-6 will be labeled "Initial Estimate" in the upper left block over the title of the form. For the initial estimate, the minimum requirements for cost information are an amount for each account (Stage), a breakdown of subaccounts for only Stage 1, and a total estimated study cost. The Division Engineer has approval authority for the PB-6 and therefore may require additional

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cost information on the initial estimate. In addition to the PB-6, the District Engineer will attach a map indicating the study area, projects completed or underway, and other ongoing studies; and a study authorization and cost history in the format of Illustration No. B-2.

b. The District Engineer should submit to the Division Engineer for approval an updated PB-6 and supplemental information as follows:

(1) Plan of Study. A revised PB-6 should be submitted with a Plan of Study for division approval. The PB-6 should now show the estimated costs for subaccounts in Stages 2 and 3 and any adjustments to the subaccounts in Stage 1 based on actual and anticipated expenditures.

(2) Major Changes in Study. A revised PB-6 should be submitted to the Division Engineer when the district makes a major change in a study which affects the total estimated cost. The data and information required to justify changes shall be determined by the Division Engineer.

(3) Budgetary Submission. An updated PB-6 should be approved by the Division Engineer for studies which the district plans to recommend in the next budgetary submission to OCE. District Engineers should update the PB-6 to reflect changes in wages and price levels (based on unobligated balance at effective time of change), changes in estimated costs, and adjustments between the accounts and subaccounts. The Division Engineer should assure all such PB-6's are approved by 1 July each year.

(4) Supplemental Information. The authorization and cost history sheet should be updated each time the PB-6 is updated, or the previous sheet attached with the annotation of "no change".

c. When the Division Engineer approves a PB-6, an information copy shall be forwarded to HQDA (DAEN-CWP) WASH DC 20314 and to HQDA (DAEN-CWB) WASH DC 20314, to include the study authorization and cost history, and transmittal correspondence containing substantive comments.

4. Preparation and Format. Account, subaccount and total study costs on the PB-6 are rounded to the nearest thousand dollars without decimal; e.g. \$25,427 is shown as 25. Total Federal study cost estimates will be made by summing the costs of accounts and/or subaccounts. Total non-Federal study cost estimates should also be included and shown separately by footnotes or supplemental sheet. Changes subsequent to initial appropriations are reported to Congress in annual justification data.

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a. Column (a) - Subaccount Number. Enter the subaccount number from Appendix A for the corresponding subaccount title shown in column (b). The District Engineer may use further breakdown of subaccounts as the accounting system will permit.

b. Column (b) - Subaccount Title. Show only specifically applicable subaccount title defined in Appendix A and "Total". The reported subaccounts are to be arranged in the same sequence as shown in Appendix A.

c. Columns (c) (d) (e) (f) - Current Cost Estimate. Enter the estimated cost of each line item by account. The total cost by line for columns c, d and e should be entered in column f.

d. Column (g) - Previous Cost Estimate. Make no entries for an initial PB-6. Indicate, in the heading box, the date of the previous approved cost estimate. Enter the previous approved cost estimate for each line item.

e. Column (h) - Remarks. Enter briefly any significant information clarifying the entries for applicable line items, such as an explanation of a major difference between the current and previous cost estimate. Remarks exceeding the space available may be shown as a footnote at the bottom of a page or on a separate page.

f. Additional Information. Fish and Wildlife study costs which are now funded at study level, previously funded at OCE level, are to be shown separately by footnote on the PB-6.

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